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ABSTRACT

This study examined, over a 3-year period, the ability of financial assistance for minority students to bridge the gap between generic higher education and the high-prestige, high-cost institutions that are associated with long-term economic benefits to graduates. Applying a variation of the status attainment model to data for the 1989-1990 National Postsecondary Student Aid Survey and its 1992-1993 successor, equity of school choice was examined among various ethnic groups. Over the three year period, average family incomes for Blacks and Hispanics declined while White and Asian family incomes increased. All groups averaged higher amounts of student financial aid with the largest gains for Asians, then Blacks, Hispanics, and Whites. The existence of grants appeared to be encouraging particularly for Blacks and Hispanics, who "buy-up" in the college-price hierarchy. Loans had a lesser influence on college selection by price. Although, educational goals were the most important variable for all groups of the decision to attend a four-year versus two-year institution, financial aid made some difference in choice of institution Financial aid made more impact in 1993 than 1990, enabling all four groups to spend more on tuition. The analysis shows the importance of financial aid in widening a student's choice regarding both tuition spending and institutional level. (Contains 39 references.) (JLS)

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An Exploratory Study of College Purchase Options: How Financial Aid Widens Minorities' Choices

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This paper was presented at the annual meeting of the Association for the Study of Higher Education held in Memphis, Tennessee, October 31 - November 3, 1996. This paper was reviewed by ASHE and was judged to be of high quality and of interest to others concerned with higher education. It has therefore been selected to be included in the ERIC collection of ASHE conference papers.

INTRODUCTION

Hearn (1991) suggests that the "matching of colleges and students remains in many ways, a little understood black box." While the implications of the black box metaphor are many, our interest here deals with that portion of the black box that conceals the ramifications of financial aid. Financial aid most certainly improves access to higher education for large numbers of students, but does it effectively facilitate choice in their purchasing decisions? Hearn (1991) argues that the "most fundamental threats to equality of opportunity may lie in the realm of choice," and that scrutiny of the role of financial factors is critical in the light of ongoing federal policy reviews. Federal financial aid as we have known it for more than two decades may yet become a historical footnote -- a compassionate gesture that ultimately failed to document its achievements in a compelling enough form. In the eventuality of more students chasing even fewer dollars, it becomes important to benchmark the gains of recent years. Specifically, we will examine over a three-year period the ability or inability of minority students' financial assistance to bridge the gap between generic higher education and the high-prestige, high-cost institutions that have been associated with long-term economic benefits to graduates (Pascarella and Terenzini, 1991). Put more simply, we are asking whether there is a relationship between the aid available to the individual student, and the educational opportunities these subsidies permitted?

What differentiates our study from the previously cited works is both its focus -- minority students' choices -- and its time-frame -- a three-year period from 1989 to 1992. Using data from both the 1989-1990 National Postsecondary Student Aid Survey and its 1992-1993 successor, we will endeavor to show what has happened to equity of choice among various ethnic groups. Specifically, we will focus on two areas involving choice: tuition spending and attendance at a two-year or four-year institution. Trend studies in this area appear to be infrequent, yet an understanding of gains or losses in this area carries important consequences for policy making. Trow (1984) demonstrated that while high school graduates can enter the postsecondary system, substantial barriers determine where the graduate may attend college. We hope to distinguish both those students most affected in their ability to pay high tuitions or two attend four-year schools.

We will also consider the extent to which financial aid mitigates the situation and extends their educational opportunities.

Trends In Financial Aid

By way of background, Table 1 illustrates the overall changes which have occurred in various forms of financial aid for various racial and ethnic groups. Generally a smaller percentage of students received the various forms of aid in 1993, than in 1990, although the average amount of aid they received increased by about 17%. Distribution varied widely between the two groups and between the two points in time. For example, the percentage of Blacks receiving any aid dropped by 7.1%, while the average aid for Blacks increased by $622. And, as one might expect, the largest increases in aid amounts were in loans, where the average loan aid amount increased by nearly 40%.

LITERATURE REVIEW

The Benefits Of Choice

Here we are attempting to draw a clear distinction between the issue of institutional access, which is *not* our present concern, and institutional choice, which relates directly to the fairness with which the benefits of higher education are distributed. These benefits relate to at least three areas, two of them accruing to the students themselves, and another to the institutions.

Fenske (1983) pointed out that postsecondary educational institutions cannot be equated, one to another, and a student's future depends both on attaining postsecondary education and on the particular institution attended. Fairness implies that academically qualified students have the opportunity to choose the more elite institutions and ultimately realize the advantages associated with these. Among these benefits, Pascarella and Terenzini (1991) cite greater career mobility, greater managerial or technical responsibility, and greater likelihood of promotion, all factors which have clear implications for greater earnings.

Table 1: Percent of undergraduates enrolled in the fall of 1989 and 1992, receiving aid by type of aid, average award, and race/ethnicity

Race/Ethnicity	Fall 1989 enrollment of undergraduates in thousands	Fall 1992 enrollment of undergraduates in thousands	Any Aid			Grants			Loans			Work-study			Other Aid		
			1989-90	1992-93	Change	1989-90	1992-93	Change	1989-90	1992-93	Change	1989-90	1992-93	Change	1989-90	1992-93	Change
PERCENT																	
All Undergraduates	**12,600**	**18,478**	44	41 4	-2 6	37 2	36 6	-0 6	20 4	20 4	0 0	5 4	4 8	-0 6	8 2	5 8	-2 4
Race/Ethnicity																	
White, non-Hispanic	9,410	13,818	41 2	39 9	-1 3	34 2	32 1	-2 1	19 1	20	0 9	5 2	4 5	-0 7	8 3	5 6	-2 7
Black, non-Hispanic	1,142	1,847	61 2	54 1	-7 1	55 3	47 2	-8 1	28 2	26 8	-1 4	8 4	6 8	-1 6	7 8	8 2	0 4
Hispanic	840	1,432	44 2	43	-1 2	38 7	38 8	0 1	19 9	15 2	-4 7	5 3	4	-1 3	7 9	4 9	-3 0
Asian American	575	718	35 5	30 8	-4 7	31 2	26 8	-4 4	14 7	15 3	0 6	5 7	5 8	0 1	6 5	2 7	-3 8
American Indian	83	172	51 6	47 8	-3 8	46 8	42 6	-4 2	16 2	15 4	-0 8	6 9	4 4	-2 5	11 9	8 4	-3 5
AVERAGE AWARD: FULL-TIME, FULL YEAR UNDERGRADUATES																	
All Undergraduates	**3,947**	**6,000**	$4 732	$5 543	$811	$3,095	$3,487	$392	$2,764	$3,834	$1,070	$1,071	$1,357	$286	$2,091	$2,932	$841
Race/Ethnicity																	
White, non-Hispanic	3,208	4 542	$4 597	$5 495	$898	$2,976	$3,438	$462	$2,783	$3,879	$1,096	$1,033	$1,362	$329	$2,028	$2,978	$950
Black, non-Hispanic	301	563	$5 116	$5 738	$622	$3,433	$3,424	($9)	$2,543	$3,619	$1,076	$1,143	$1,324	$181	$2,442	$2,809	$367
Hispanic	189	384	$5 139	$4 960	($179)	$3,388	$3,302	($86)	$2,755	$3,655	$900	$1,252	$1,301	$49	$1,919	$2,587	$668
Asian American	174	268	$5 614	$6 454	$840	$3,836	$4,569	$733	$2,915	$3,827	$912	$1,296	$1,542	$246	$2,758	$3,078	$320
American Indian	19	48	$6 299	$5 072	($1 227)	$3,921	$3,181	($740)	$3,361	$3,568	$207	$1,182	–	N A	$3,362	$2,800	($562)

Sources: U S Department of Education, National Center for Education Statistics, National Postsecondary Student Aid Study, 1989-90 and 1992-93

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In the shorter term, Hossler et al (1989) suggested that a relationship exists between the appropriateness of student choice and student persistence. In other words, if a student is able to select an institution well suited to his or her abilities, he or she is more likely to complete the program. Fife (1975) found the benefits of choice extended even to the institutions themselves. If students are able to make their choices based on the perceived quality of the institution and its programs, the institutions are prompted to remain responsive to students' educational demands. For all these reasons then, student choice should be seen as a desirable outcome.

The Role Of Student Aid In Choice

While choice is important for the above reasons, the role of financial aid in facilitating choice is less clearly understood. Studies during the 1970s, mainly of state financial aid programs (Fenske and Boyd, 1971, Fenske, Boyd and Maxey, 1979, Fife and Leslie, 1976, Leslie and Fife, 1975) found these were instrumental in enabling recipients to attend private as opposed to public four-year institutions. However, these researchers did not pursue other possible explanations of the relationship.

Among single institution studies, Somers (1993) determined that the probability of first-time applicants choosing the public commuter university increased by 23% if any financial aid was offered. This study controlled for background characteristics such as sex, race, income, age, dependency status and ACT score. Another study at Rutgers University (Seneca and Taussig, 1987) also found the probability of enrollment increased with the amount of aid offered, regardless of income, although the effects were smaller among higher income students. Other studies (Jackson, 1978, St. John, 1991) found that aid offers or awards increase the probability of enrollment, particularly for students of lower socioeconomic status.

The technique of meta-analysis permitted Leslie and Brinkman (1988) to evaluate the effects of financial aid on choice as reported in 23 separate econometric studies. They concluded that financial aid encourages choice by enabling additional students to attend more expensive four-year and private schools. Lower-income students were more affected than higher income ones by the costs of attendance and by financial aid, particularly in the form of grants.

Munday (1981) looked at institutional homogeneity in attempting to see whether financial aid allowed low-income students to attend institutions with students different from them in terms of income and ability. This study found that among aid applicants only, neither the student's income nor ACT score were related to the average income or average ACT at the institution attended. Flint (1991) reversed the process and compared the predictors of characteristics of institutions chosen by all college-bound students with the predictors of the characteristics of institutions chosen by financial aid applicants. Flint concluded that institutional characteristics such as costs, selectivity and average student body affluence explained a higher percentage of the variance for all college students than the corresponding equations for aid applicants alone. Family income was a significant predictor of the selectivity and affluence of the institution selected by all college-bound students, but not of the institution selected by financial aid applicants.

In summary then, financial aid generally allows recipients to attend institutions that are more expensive (Leslie and Brinkman, 1988, Flint, 1991) and private rather than public (Leslie and Brinkman, 1988). As well, financial aid appears to promote choice among lower income students (Jackson, 1978, Leslie and Brinkman, 1988). Likewise, the likelihood of enrollment increases with the amount of aid (Seneca and Taussig, 1987, Somers, 1993). Finally, financial aid may allow students to consider a less homogeneous set of institutions.

Effects Of Different Forms Of Financial Aid

We tend to talk about financial aid in the singular, even though a host of combinations and permutations is possible. This means that financial aid packaging is a complex issue, involving not just the totality of the amount, but the individual components. Nolfi et al (1978) determined that any combination of grants, loans or work-study increased the probability of enrolling in a postsecondary school, regardless of program length, however the effect of scholarship aid on the probability of enrolling in a two-year institution was considerably larger than the effect of tuition (Nolfi et al. 1978, Fuller et al., 1982, Manski and Wise, 1983). Tierney (1980) compared the likelihood of applicants choosing a private over a public institution after controlling for differences between the institutions and individual characteristics. He found the probability of choosing the

private institution increased with the amounts of grants and loans that it offered, while work study funds also increased the likelihood it would be chosen except among lower- and higher-income non-Whites.

More recent studies support the idea that financial aid in the form of grants promotes choice, while loans do not. Schwartz (1986) found that an increase in publicly funded grants raised the probability of enrollment among lower and middle income students, with no comparable impact among upper income student. Likewise Jackson (1990) used the High School and Beyond data on 1980 seniors to show that scholarships or grants increased the probability of college entry among Blacks by 11%, and among Whites by 6%, but was not related to the probability of enrollment for Hispanics. Receipt of a loan was not related to the probability of entry for any of the three groups. Chapman and Jackson (1987) examined the likelihood that a national sample of high ability 1984 high school seniors would choose a given institution. After controlling for a range of students and institutional characteristics they found scholarship and grant aid increased this likelihood for both low and high income students.

Among single institutional studies, Moore, Sudenmund, and Slobko (1991) looked at aid applicants who were accepted for admission at Occidental College in 1989. Their probability of choosing Occidental increased with the amount of grants offered by Occidental, decreased with the amount of grants offered by the alternatives, and was unaffected by loans or work-study aid offered by either institution. Likewise, Somers (1993) found the probability of students choosing to enroll at one public commuter university increased by 24% with each $1,000 in scholarship aid, but was not related to the amounts of grants, loans or work study, after controlling for background characteristics and ACT score.

Willingness to borrow (Ekstrom, 1991) improved the likelihood that a student would attend a four-year rather than a two-year institution. Students with higher socioeconomic status, higher educational aspirations and greater knowledge of college costs showed more willingness to borrow. Olson and Rosenfeld (1984) found a relationship between willingness to borrow and

income level. About 40% of families with incomes less than $10,000 were unwilling to go into debt, compared with 28% of families with incomes above $40,000.

Olivas (1985) noted that there is no compelling theoretical framework in the area of financial aid packaging. He found Hispanics were largely dependent on single source aid -- Pell Grants -- which highlights their vulnerability to cutbacks in this area. St. John and Noell (1989) also examined the influence of various types of student aid packages in reference to enrollment decisions. They found packages with loans were less consistently significant in attracting minority applicants than White applicants in the 1980s.

Overall then, it appears that grants, but not loans promote choice (Schwartz, 1986, Jackson, 1990, Chapman and Jackson, 1987, Moore et al., 1991). Grants may be particularly effective for Blacks (Jackson, 1990) and for lower income students (Schwartz, 1986). Finally, a reluctance to borrow may limit choice for students from lower-income backgrounds (Ekstrom, 1991, Olson and Rosenfeld, 1984) and minorities (St. John and Noell, 1989).

The Relationship Of Financial Aid And Institutional Costs

Several studies (Nolfi et al, 1978, Fuller et al, 1982, Manski and Wise, 1983), which analyzed subsamples from the National Longitudinal Study of the High School Class of 1972, supported the idea that higher tuition and higher living costs decreased the attractiveness of a given institution, while financial aid increased it (after controlling for academic aptitude, socioeconomic and demographic characteristics, high school quality, labor market conditions, and institutional quality). The same studies also found that tuition cost had a larger effect on the probability of the student enrolling in a four-year than a two-year institution. As well, lower income students were more sensitive to tuition levels than higher income students as demonstrated by their choices (Nolfi et al, 1978, Manski and wise, 1983).

In their study of 1979 and 1981 Pennsylvania high school seniors, Tierney and Davis (1985) found the difference in net price to be the most consistent predictor of choice between different types of four-year institutions (public research or public comprehensive, low cost private or public comprehensive). Net price, they defined as direct costs less financial aid. Their study controlled for

the difference in institutional selectivity and student characteristics including sex, race, SAT score and family income, but did not attend to interactions between income and cost.

Among single institution studies, Chapman (1979) found increases in price (total out-of-pocket costs of attendance relative to parental income) reduced the probability of financial aid applicants enrolling in two of three programs (liberal arts and fine arts, but not engineering). Price, however, was not related to enrollment among non-aid applicants in any program. (Chapman controlled for student and institutional characteristics). In Moore et al's study of Occidental College (1991), they found that a $1,000 increase in the net cost of Occidental College relative to the net cost of an alternative reduced the probability that a financial aid applicant would choose to enroll at Occidental by 7.8% after controlling for student characteristics, institutional costs and characteristics of the alternative institution. The same $1,000 increase did not affect non-aid applicants' choice. Overall then, lower-income students and financial aid applicants would appear more responsive to direct costs than other students (Nolfi et al., 1987, Manski and Wise, 1983, Chapman, 1979, Moore et al, 1991).

Other Factors Influencing Choice

Financial aid is far from the only variable that influences college choice. Students generally prefer to attend higher quality institutions (Fuller et al, 1982, Chapman, 1979, and DeMasi (1989), with students of higher ability applying to higher quality institutions than their peers (Manski and Wise, 1983, Ozden, 1993). As well, students opt for institutions where the ability level is similar to their own (Nolfi et al, 1978, Fuller et al., 1982, Manski and Wise, 1983). Parental income and education also are significant predictors of college enrollment (Schwartz, 1986, St. John, 1991), with the prestige and selectivity of the institution preferred increasing with parental income and education (Manski and Wise, 1983, Ozden, 1993, Hearn, 1984). Students with higher education aspirations showed a preference for more selective and expensive institutions (Hearn, 1984). Recent research indicates little difference between men and women in their choice among postsecondary schools (Hearn, 1984, 1988, Schwartz, 1985). However, the impact of race on institutional choice appears far from clear, with the findings varying depending on the sub-group

aggregation (Schwartz, 1985, St. John, 1991, Hearn, 1984, 1988). In addition, Gladieux (1993) cites quality of prior schooling, family attitudes, motivation and awareness of opportunities as factors in college choice. Ultimately though, financial aid appears to be the factor that over the past 30 years has been most frequently and visibly manipulated in order to increase educational opportunities and for this reason will constitute our major independent variable.

CONCEPTUAL FRAMEWORK

This study will use a variation of the status attainment model to investigate student choice among postsecondary educational institutions. Hearn (1984, 1988) suggested that the characteristics of the institution in which a student chose to enroll were a function of ascriptive characteristics such as race and sex, socioeconomic characteristics like parental education, family income and number of siblings and academic characteristics such as test scores, high school grades, curricular track and educational expectations. When he controlled for academic characteristics, he found both ascribed and socioeconomic characteristics continued to play an important role in influencing educational choice, thus evincing conclusively the existence of continued barriers to educational equity. After controlling for academic achievement, Hearn determined that socioeconomically disadvantaged students attended cheaper, less selective institutions that spent less per undergraduate. While Hearn focused on "equity of condition," the quality of schooling students are presumed to be receiving relative to their background and resources, here we examine "equity of opportunity," the type and cost of schooling that students select, relative to their background and the student aid that they were awarded.

METHOD

The 1989-90 National Postsecondary Student Aid Survey, and its counterpart in 1992-93 are cross-sectional, student-based studies of a nationally representative sample of all postsecondary students enrolled in the U.S. in the fall of 1989, winter of 1990 or the fall of 1992, winter of 1993 respectively. These samples of approximately 70,000 students (1990) and 66,000 students (1993) included full-time, part-time, aided, non-aided, undergraduate, graduate and professional-degree

students at 1,535 institutions (1990) and 1,100 institutions (1993). Institution types ranged from those that award doctoral degrees to those that offer three-month programs, including both public and private control and both profit and nonprofit entities. As well, NPSAS collected data from multiple sources such as parents, institutional registrars and financial aid records.

To maintain the comparative nature of this exploratory study, all of the following actions have been performed on both the 1990 data and the 1993 data. As a result we will have findings and conclusions drawn from each set of data, plus a discussion of noteworthy developments over the three-year period. This latter section will form the basis for our conclusions.

Like Hearn (1991), the research employs multiple regression with listwise deletion, but there are some important differences. First, we chose only first-time, full-time college freshmen who were U.S. citizens and classified as dependent for income tax purposes. We also focused only on those students enrolled in programs of two or more years in duration.

Due to missing data and the size of some minority group samples, we found ourselves unable to use all of the variables that Hearn included in his study (see Appendices A and B). As a result, our choice for personal characteristics included: race, sex, parental income, number in the family in higher education, cumulative GPA, and educational aspirations. For the types of financial aid, we used grants, which included various kinds of scholarships, loans (excluding PLUS loans) and work-study aid.

Arriving at dependent variables proved more difficult. Hearn was able to use college selectivity and institutional expenditure per student as dependent variables describing college destinations, but neither is available in the NPSAS database. However, institutional level is specified, and with the current controversy over the increasingly vocational role of two-year community and junior colleges, we judged that a dichotomous variable, representing either a two-year or a four-year institution, effectively represented this aspect of choice.

The NPSAS data also provides a continuous variable representing the total cost of tuition and fees for all sampled students. By correlating the Carnegie classifications for the NPSAS 1993 data with their tuitions, we ascertained a strong correlation exists between the doctoral-granting

institutions and the highest tuitions. We are not arguing that tuition price alone means access to a quality institution. Rather we are suggesting that in respect to the college purchase decisions, more options including the nation's top doctoral-granting and top liberal arts schools are available to the students who are able to pay top tuition prices. Regressions on both these variables enabled us to see the relative effects of institutional level (two- or four-year) and tuition cost on students' ultimate college destinations and to estimate how large a role the various types of financial aid play in the process[1].

Hypotheses Tested

1. Controlling for student characteristics, grants (including scholarships) will improve the likelihood of a student attending an expensive institution or a four-year institution.
2. Controlling for student characteristics, loans will improve the likelihood of a student attending an expensive institution or a four-year institution.
3. Controlling for student characteristics, work-study aid will improve the likelihood of a student of a student attending an expensive (quality) institution or a four-year institution.

FINDINGS

Descriptives

NPSAS 90: Descriptives

Background characteristics were available on 4,095 freshman students, all of them U.S. citizens, in their first year of full-time attendance at a U.S. college or university. All were classified as dependents for income tax purposes. Table 2 provides descriptive statistics on the student sample involved in the study.

Of the four ethnic groups in the study, Asians, Hispanics and Whites showed slightly more females than males, while the Black group was strongly female. Family incomes for both Black

[1] Although the dichotomous dependent variable institutional level warrants the use of logistic regression, linear regression was used based on Dey and Astin's (1993) findings that "despite the theoretical advantages offered by logistic regression and probit analysis, there is little practical difference between either of these two techniques and more traditional linear regression."

Table 2: NPSAS: 90: Descriptive statistics for four ethnic groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 208)		White (n = 3,398)	
	M	SD	M	SD	M	SD	M	SD
Background Characteristics								
Sex (1=male; 0=female)	0.47	0.50	0.38	0.49	0.47	0.50	0.49	0.50
Family Income	$55,015	$60,765	$32,187	$37,501	$35,070	$24,548	$47,115	$39,134
Family in PSE	1.44	0.68	1.29	0.66	1.33	0.73	1.34	0.72
Cumulative GPA	24.93	8.85	20.52	9.49	24.96	9.64	24.27	9.10
Educational goals (3=B.A.; 4=M.A.)	3.60	0.84	3.64	0.90	3.68	0.93	3.55	0.89
Types of Aid								
Total Grants	$856	$2,266	$1,618	$2,404	$1,384	$2,388	$986	$2,014
Total Loans	$464	$1,411	$642	$1,112	$513	$1,121	$473	$1,124
Total Workstudy	$49	$266	$140	$402	$88	$317	$73	$291
Dependent Variables								
Tuition spending	$3,421	$4,862	$2,547	$2,950	$2,270	$3,360	$3,152	$3,571
Inst. level (1=4 yr.; 0= 2-3 yr.)	0.57	0.50	0.56	0.50	0.52	0.50	0.62	0.48

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for non-response bias and to reflect original sample size.

and Hispanic students averaged between $12,000 and $15,000 less than those of White students and between $20,000 and $23,000 less than those of Asian students. All groups averaged more than one family member in college, but at 1.44 Asians registered the highest and Blacks at 1.29 the lowest. Three of the four groups averaged cumulative GPAs in the 24-point range on a 40-point scale, while the Black student group averaged 20.52. The groups were nearly identical in their aspirations, with all registering degree aspirations above the bachelor's level.

Financial aid appeared to be narrowly dispersed among the groups, with Blacks averaging the highest grants at $1,618, Hispanics next at $1,384, Whites at $986 and Asians the least at $856. A similar pattern held for loans, with Blacks borrowing the most at $642, then Hispanics, $513, then Whites, $473, and finally Asians again the least at $464. Asians also benefited the least from work-study at $49, compared with $73 for Whites, $88 for Hispanics and $140 for Blacks.

Means for the four groups showed the majority of students from each were attending four-year institutions, although in the case of Hispanics in particular, the split was almost even. As one might expect from this split, Hispanics were paying the lowest average tuitions, $2,270, followed by Blacks at $2,547, Whites, $3,152, and Asians the highest at $3,421.

NPSAS: 93 Descriptives

Background characteristics were available on 1,638 freshman students with the same characteristics as the previous group. Table 3 provides descriptive statistics on the student sample involved in the study.

Some observations from this table are worth noting: Our Hispanic and White groups are divided equally between male and female students, while for Asians, men are in the majority, and for Blacks women are in the majority. As we might expect based on the 1990 descriptives, family income for both the Black and Hispanic students is remarkably similar, averaging about $30,000. Asians and White students come from higher income backgrounds, with Asian family income averaging $68,299 and Whites, $53,729. The number of siblings in higher education seems to vary little among Whites, Blacks and Hispanics, all averaging about 1.3 family members in college. Only the Asians were higher at 1.58 siblings. At average of 25.95, Asians also appear to

Table 3: NPSAS: 93: Descriptive statistics for four ethnic groups

	Asian (n = 85)		Black (n = 151)		Hispanic (n = 112)		White (n = 1,290)	
	M	SD	M	SD	M	SD	M	SD
Background Characteristics								
Sex (1=male; 0=female)	0.63	0.49	0.42	0.49	0.50	0.50	0.50	0.50
Family Income	$68,299	$75,048	$30,926	$31,225	$30,227	$28,403	$53,729	$42,121
Family in PSE	1.58	0.73	1.29	0.58	1.32	0.58	1.30	0.55
Cumulative GPA	25.95	7.08	22.54	8.18	22.38	9.28	25.87	8.25
Educational goals (3=B.A.; 4=M.A.)	4.14	0.73	4.07	0.79	3.86	0.81	3.74	0.92
Types of Aid								
Total Grants	$2,480	$4,303	$2,493	$3,331	$1,945	$3,076	$1,501	$2,897
Total Loans	$792	$1,670	$1,323	$1,582	$473	$1,102	$736	$1,497
Total Workstudy	$209	$552	$222	$542	$112	$390	$122	$406
Variables								
Tuition spending	$7,782	$7,036	$4,110	$4,025	$2,746	$3,825	$4,531	$5,012
Inst. level (1=4 yr.; 0= 2-3 yr.)	0.79	0.41	0.75	0.43	0.59	0.49	0.60	0.49

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for non-response bias and to reflect original sample size.

be carrying higher GPAs than any of the other groups, with Whites next at 25.87 and Blacks and Hispanics similar at 22.54 and 22.38 respectively. Asians averaged the highest aspirations with more intending to go beyond a master's degree. Blacks were nearly similar in their aspirations to the Asians, with Hispanics and Whites aiming at a master's degree.

When financial aid was considered, Blacks averaged slightly higher grant amounts than Asians ($2,493 compared with $2,480) and more certainly than Hispanics (average, $1,945) and Whites (average, $1,501). Hispanics borrowed considerably less than any other group (average $473, compared with $736 for Whites, $792 for Asians and $1,323 for Blacks). And just as Olivas (1985) noted, Hispanics at an average of $112 were largely shut out of work-study aid, compared with $122 for Whites, $209 for Asians and $222 for Blacks.

Blacks and Asians appear to be going for the most part to four-year institutions, compared to both Whites and Hispanics who were more evenly divided between two-year and four-year schools. This is partly reflected in the average tuition paid by all four groups: Asians are paying the highest, an average of $7,782, followed by Whites at $4,531, Blacks at $4,110 and Hispanics at $2,746.

Discussion and Comparisons of The Descriptives

The relative proportions of men/women have changed only slightly over the three years for Blacks, Hispanics and Whites, with Asian group becoming predominantly male. The average family incomes for the Blacks and Hispanics have suffered an apparent decline, while the incomes of the other two groups have risen. The number of family members in college has remained stable for all groups except Asians for whom it has risen. The average GPA has risen for all groups but Hispanics over the period, while educational aspirations appear to have increased for both Asians and Blacks. The educational aspirations of the other groups seem stable.

The grant picture has changed considerably over the three-year period with all groups averaging higher amounts of aid. The biggest gain was recorded for Asian students, with the 1993 group receiving $1,624 more than their counterparts in 1990, compared with $875 more for the 1993 Black group, $561 for the Hispanics in 1993 and $515 for the Whites in 1993. Borrowing

followed a different pattern with the loan amount growing from 1990 to 1993 for the Black group by $681, for Asians by $328 and for the Whites, by $263. Only for Hispanics did borrowing appear to decline by $40 when one compares the two groups. Work-study aid continued to benefit Hispanics the least, with a bare $24 increase in the average from the 1990 to the 1993 group. By comparison, work-study aid grew over the period by $160 for Asians, $82 for Blacks and $49 for Whites.

The descriptive tables also reflect the general rise in tuition that occurred over the three-year period as well as the possibility that some groups may be choosing more pricey institutions. The average cost of tuition from 1990 to 1993 increased by $4,361 for Asians, $1,563 for Blacks, $1,379 for Whites and $476 for Hispanics. The choice of four-year or two-year institution appeared to change for all groups, with a larger number of Asians and Blacks opting for four-year schools, a slightly larger number of Hispanics choosing four-year schools, and fewer Whites choosing four-year schools.

Correlations

NPSAS: 90 Correlations

Table 4 presents the correlations among both independent and dependent variables. Generally these tend to reinforce what is known about some minority groups. Sex was negatively correlated for Blacks, implying a preponderance of females (female = 0) and positive for Whites. For both Blacks and Hispanics, minority status was negatively associated with family income, suggesting this is considerably lower for these two groups. The number of family members attending postsecondary institutions was not significantly correlated with any group. Blacks correlated negatively with the cumulative GPA variable, implying more of these students with lower averages. Whites were associated positively with cumulative grade point average, but were associated with lower educational aspirations.

Both Blacks and Hispanics were positively correlated on grants, while Whites were negatively correlated with grants. Blacks were positively associated with loans and workstudy, while Whites were negatively associated with these aid forms.

Table 4: NPSAS 90: Correlation Matrix

	Black	Hispanic	Asian	White	Sex	Income	Family in PSE	GPA	Ed. Goals	Grants	Loans	Work study	Tuition	Inst. Level
Black	1.0000													
Hispanic	-.0766 ***	1.0000												
Asian	-.0590 ***	-.0438 ***	1.0000											
White	-.6674 ***	-.4949 ***	-.3814 ***	1.0000										
Sex	-.0665 ***	-.0071	-.0046	0.0498 ***	1.0000									
Income	-.1057 ***	-.0608 ***	.0453 ***	0.0975 ***	.0551 ***	1.0000								
Family in PSE	-.0227	-.0039	.0258	0.0086	-.0068	.1034 ***	1.0000							
GPA	-.1153 ***	.0256	.0202	0.0753 ***	-.1069 ***	.0285 *	-.0042	1.0000						
Ed. Goals	.0237	.0315 *	.0065	-0.0477 ***	-.0397 **	.0866 ***	.0492 ***	.0858 ***	1.0000					
Grants	.0846 ***	.0363 **	-.0182	-0.0778 ***	-.0354 **	-.1750 ***	.0771 ***	.1430 ***	.1333 ***	1.0000				
Loans	.0429 ***	.0047	-.0042	-0.0314 *	-.0256	-.1296 ***	.0512 ***	.0455 **	.0256	.3304 ***	1.0000			
Workstudy	.0634 ***	.0059	-.0183	-0.0490 ***	-.0691 ***	-.1025 ***	.0141	.0592 ***	.0550 ***	.2925 ***	.2189 ***	1.0000		
Tuition	-.0453 ***	-.0517 ***	.0191	0.0601 ***	.0047	.2004 ***	.0793 ***	.1716 ***	.1959 ***	.4507 ***	.3419 ***	.1679 ***	1.0000	
Inst. Level	-.0306 *	-.0418 **	-.0133	0.0579 ***	.0052	.1080 ***	.0825 ***	.1010 ***	.3045 ***	.2315 ***	.2004 ***	.1096 ***	.4082 ***	1.0000

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.

***p < .001; **p < .01; *p < .05

Whites were associated with higher levels of tuition, and Blacks and Hispanics with lower levels. Blacks and Hispanics were associated with two-year institutions. Whites were associated with four-year institutions.

As one might expect, higher tuitions correlated strongly with four-year institutions (.41), as well as moderately with higher levels of family income, higher GPAs, higher educational goals, and higher levels of grants (.45) , loans (.34), and work-study aid. Higher tuition is also weakly associated with a larger number of family members in post-secondary education. Attending four-year institutions is also associated moderately with higher income, more family members in college, higher GPAs, higher educational goals, and higher levels of grants, loans, and work-study aid.

NPSAS: 93 Correlations

Table 5 presents the correlations among both independent and dependent variables for the 1993 data. Sex was negatively correlated for Blacks only, implying a preponderance of females (female = 0) in only that group. Asians were positively correlated with sex, reflecting the prevalence of males. For both the Whites and Asians, their race was associated with higher incomes, but Blacks and Hispanics were associated with lower incomes. Asians were moderately correlated with larger numbers of family members in higher education. Whites were moderately associated with higher GPAs, and Blacks and Hispanics with lower GPAs. Blacks had the strongest association with ascending educational aspirations, followed by Asians. Only Whites were correlated with lower educational goals.

Blacks were most strongly associated with higher amounts of grants, followed by Asians. Again only Whites were associated with lower levels of grants. Both Hispanics and Whites were negatively associated with high borrowing, while Blacks were moderately associated with higher loans. Blacks were positively associated with work-study aid, and Whites were negatively associated with this aid form.

Table 5: NPSAS 93: Correlation Matrix

	Black	Hispanic	Asian	White	Sex	Income	Family in PSE	GPA	Ed. Goals	Grants	Loans	Work study	Tuition	Inst. Level
Black	1.0000													
Hispanic	-.0860 ***	1.0000												
Asian	-.0496 **	-.0453 **	1.0000											
White	-.5676 ***	-.5188 ***	-.2992 ***	1.0000										
Sex	-.0479 **	.0053	.0430 **	.0184	1.0000									
Income	-.1395 ***	-.1340 ***	.0719 ***	.1707 ***	.0437 **	1.0000								
Family in PSE	-.0155	.0030	.1091 ***	-.0325	.0023	.0825 ***	1.0000							
GPA	-.0966 ***	-.1033 ***	.0133	.1127 ***	-.0858 ***	.0703 ***	-.0071	1.0000						
Ed. Goals	.0985 ***	.0225	.0726 ***	-.1179 ***	.0127	.1101 ***	.0571 **	.1408 ***	1.0000					
Grants	.0837 ***	.0256	.0434 **	-.1043 ***	-.0356 *	-.1644 ***	.0444 *	.1401 ***	.1605 ***	1.0000				
Loans	.1138 ***	-.0560 ***	.0023	-.0426 **	.0018	-.1457 ***	.0182	.0528 **	.0610 **	.3366 ***	1.0000			
Workstudy	.0637 ***	-.0136	.0288	-.0472 **	-.0318	-.1059 ***	.0577 **	.0504 ***	.0966 ***	.3206 ***	.2781 ***	1.0000		
Tuition	-.0216	-.0972 ***	.1091 ***	.0277	.0224	.1962 ***	.0388 *	.2000 ***	.2292 ***	.4569 ***	.3600 ***	.2203 ***	1.0000	
Inst. Level	.0827 ***	-.0169	.0553 ***	-.0933 ***	-.0105	.1242 ***	.0726 ***	.1281 ***	.3657 ***	.2827 ***	.2075 ***	.1846 ***	.4237 ***	1.0000

Note: measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias.

***p < .001; ** p < .01; * p <.05.

Asians were moderately associated with higher levels of tuition, and Hispanics were correlated with lower levels of tuition. Whites were correlated with attendance at a two-year institution, while both Blacks and Asians were associated with four-year schools.

As one might expect, higher tuitions correlated strongly with four-year institutions (.42), as well as moderately with higher levels of family income, higher GPAs, higher educational goals, and higher levels of grants (.46), loans (.36), and work-study aid. Higher tuition is also weakly associated with a larger number of family members in post-secondary education. Attendance at four-year institutions is associated moderately with higher income, more family members in college, higher GPAs, higher educational goals (.37) and higher levels of grants, loans, and work-study aid.

Discussion and Comparisons of the Correlations

While in 1990, only the Whites were likely to be males, in 1993, only Asians were associated with male sex, indicating more males from the Asian group are pursuing college goals. In both 1990 and 1993, Blacks were more likely to be female. On income, little change is apparent over the period, with both Blacks and Hispanics correlated with lower income and Whites and Asians with higher incomes. This seems to bear out what we know about these groups' relative socioeconomic status. As far as family members in higher education, only the Asians' situation improved. This suggests that in Asian families more students are being enabled to attend college or university. In 1990, only Black students were associated with lower cumulative GPAs, while by 1993, both Blacks and Hispanics were associated with lower GPAs. In both years, Whites appear to have the lowest educational goals, while by 1993, Blacks had a stronger association with higher educational aspirations than any of the other groups.

In both 1990 and 1993, Whites were associated with the receipt of lower aid in the form of grants. In the 1990 NPSAS, Whites were associated with lower loans than Blacks, but by 1993, it was both Hispanics and Whites. Work-study aid was negatively associated with Whites in both 1990 and 1993.

In 1990, both Blacks and Hispanics correlated with lower priced institutions, but in 1993 only Hispanics correlated with lower priced institutions. In 1990, Blacks and Hispanics were associated with attendance at a 2-year institution. However by 1993, this situation had changed to find only Whites associated with two-year institutions.

Regressions

NPSAS: 90 --The Regressions

Tuition Spending

Impact of background characteristics on tuition spending.

Using multiple regression, we began by attempting to understand the roles of background characteristics in determining the willingness of each of the four groups to spend more for tuition and the variables related to this decision (see Table 6).

An examination of the regression of tuition cost on the control variables shows that educational goals was one of the most important variables in determining those people who attend the most costly colleges and universities. Educational goals were particularly important for Asians and Whites in determining whether they selected expensive schools, and somewhat important for Blacks in this choice. Family income was a significant factor for Blacks, Whites and Asians (in descending order), indicating the relative importance of high family incomes to the tuition spending of these particular groups. GPA was moderately important for Whites and Blacks in the choice of expensive schools. Only for Hispanics and Whites was the number of family members in postsecondary education a small contributor to the purchase of a higher price college. For no ethnic group was the student's sex related to the cost of college chosen.

As we might expect from the disparate patterns noted above, the R Square for each of the groups varies considerably, indicating how much the previously noted differences in background characteristics accounts for the variance in their spending on college. At 0.162, R. Square is highest for our Asian students, and lowest for the Hispanic students (0.008), with Black students (0.072) and White students (0.103) falling in between. In other words, for Asian students, a combination largely of educational goals and family income, explains 16.2% of the variance in the

Table 6: NPSAS:90: Regression of Tuition Spending on Control Variables for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 208)		White (n = 3,398)	
	B	β	B	β	B	β	B	β
Sex	-494.747	-0.052	151.674	0.024	151.116	0.023	191.592	0.027
Family Income	0.012	0.165 *	0.027	0.223 ***	0.007	0.055	0.017	0.185 ***
Family in PSE	754.061	0.109	-12.340	-0.003	695.320	0.162 *	234.430	0.048 **
Cumulative GPA	20.145	0.038	37.460	0.121 *	15.768	0.046	64.548	0.166 ***
Educational goals	2026.766	0.356 ***	370.801	0.107 *	33.708	0.008	661.165	0.161 ***
Multiple R	0.192		0.085		0.032		0.104	
R Square	0.162		0.072		0.008		0.103	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.

*** p < .001; ** p<.01; * p< .05

Table 7: NPSAS: 90: Regression of Tuition Spending on Background Characteristics and Grants for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 208)		White (n = 3,398)	
	B	β	B	β	B	β	B	β
Sex	-258.174	-0.027	184.785	0.029	51.201	0.008	158.571	0.023
Family Income	0.017	0.230 ***	0.040	0.323 ***	0.040	0.303 ***	0.025	0.273 ***
Family in PSE	446.022	0.064	-217.997	-0.048	233.062	0.054	40.823	0.008
Cumulative GPA	16.399	0.031	20.381	0.066	-10.301	-0.030	34.402	0.089 ***
Educational goals	1354.868	0.238 ***	82.117	0.024	7.096	0.002	427.169	0.104 ***
Total grant aid	1.127	0.497 ***	0.759	0.606 ***	0.908	0.662 ***	0.808	0.462 ***
Multiple R	0.422		0.433		0.398		0.300	
R Square	0.396		0.423		0.380		0.299	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.

***p <.001; ** p < .01; * p < .05

price of colleges attended. For Hispanics, the equation clearly doesn't explain much at all about the variance. However, if one refers back to the descriptives, Hispanics were on average paying the least tuition. For the other two groups, it appears that the influence of the selected background characteristics was considerably less than on the Asians. In other words, the equation was most successful in explaining the variance in college spending for the Asians, and least successful for Hispanics.

Impact of financial aid on tuition spending.

When the total amount of grants is added as an independent variable, the differences among the groups become more apparent (see Table 7). Most affected are the Hispanics and Blacks, for whom grants help to explain 37.2% and 35.1% respectively of the variance in college purchase price (for R Square of 0.380 for the Hispanics minus previous R Square 0.008). Likewise for Asians, grants explain an additional 23.4% of the variance and for Whites, 19.6% of the variance. In other words, the existence of grants appears to be encouraging particularly Blacks and Hispanics to "buy up" in the college-price hierarchy. In the presence of grants, family income becomes highly important for all ethnic groups, hinting at the existing relationship between the receipt of aid like Pell grants and the family income test for financial aid eligibility.

Rather predictably, loans have a lesser influence on the groups in their selection of college by price, although there are some changes (see Table 8). For Blacks, loans account for another 7.1% of the variance in college purchase price (new R Square of 0.494 minus previous R Square of 0.423). For the other groups, the variance explained by the presence of loans diminished gradually from 5.0% for Hispanics, to 4.4% for Asians and 4.2% for Whites. It would seem that the receipt of loans is encouraging some students from each group to attend a more expensive institution than they might in the absence of this form of aid. Work-study aid proved to be negligible in its impact on White students (0.0%) and almost as slight for the others: 0.5% for Hispanics; while for Asians and Blacks, R Square decreased by 0.1% for each group (see Table 9).

Table 8: NPSAS: 90: Regression of Tuition Spending on Control Variables and Loans for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 208)		White (n = 3,398)	
	B	β	B	β	B	β	B	β
Sex	-540.321	-0.057	324.422	0.051	31.157	0.005	169.336	0.024
Family Income	0.018	0.245 ***	0.043	0.346 ***	0.041	0.306 ***	0.027	0.292 ***
Family in PSE	315.521	0.045	-214.929	-0.048	82.157	0.019	1.708	0.000
Cumulative GPA	10.205	0.019	12.126	0.039	-8.325	-0.024	35.388	0.092 ***
Educational goals	1227.636	0.215 **	140.000	0.041	124.297	0.031	431.843	0.105 ***
Total grant aid	0.987	0.435 ***	0.666	0.532 ***	0.802	0.584 ***	0.692	0.395 ***
Total loan aid	0.732	0.230 ***	0.737	0.281 ***	0.800	0.246 ***	0.676	0.216 ***
Multiple R	0.468		0.505		0.450		0.342	
R Square	0.440		0.494		0.430		0.341	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.
***p <.001; ** p < .01; * p < .05

Table 9: NPSAS: 90: Regression of Tuition Spending on Control Variables and Workstudy for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 208)		White (n = 3,398)	
	B	β	B	β	B	β	B	β
Sex	-533.339	-0.058	315.033	0.050	77.304	0.012	179.323	0.026
Family Income	0.018	0.247 ***	0.043	0.345 ***	0.041	0.307 ***	0.027	0.293 ***
Family in PSE	221.257	0.032	-220.892	-0.049	96.029	0.022	4.286	0.001
Cumulative GPA	10.203	0.019	12.140	0.039	-5.684	-0.165	35.297	0.091 ***
Educational goals	1232.476	0.216 **	139.921	0.041	116.780	0.029	429.905	0.105 ***
Total grant aid	0.944	0.416 ***	0.670	0.535 ***	0.749	0.546 ***	0.679	0.388 ***
Total loan aid	0.722	0.227 ***	0.737	0.281 ***	0.811	0.249 ***	0.661	0.212 ***
Total work-study aid	0.994	0.059	-0.101	-0.014	0.974	0.094	0.371	0.031 *
Multiple R	0.471		0.505		0.457		0.343	
R Square	0.439		0.493		0.435		0.341	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.
***p <.001; ** p < .01; * p < .05

Institutional Level

Impact of background on choice of institutional level (two- or four-year)

For all groups, educational goals appear to make a strong (if not the strongest) contribution to understanding the variance in the decision to attend a four-year, rather than a two-year institution (see Table 10). Family income was a significant contributor for both Blacks and Whites. The presence of family members in postsecondary education appeared to encourage both Hispanics and Asians to attend four-year schools. For Whites the family effect was small but positive. GPA had a strong effect in persuading Blacks to attend four-year colleges and universities, and a moderately strong effect in this direction for Asians. It was weaker for Whites. The role of sex was insignificant for all groups.

The adequacy of the equation in explaining variance in the type of institution chosen differed considerably for the four groups. At its best, it explained 17.5% of the variance for Asians and 11.8% for Blacks, compared to 9.8% for Whites and 7.9% for Hispanics.

Impact of financial aid on choice of institutional level (two- or four-year)

The effect of financial aid seems to reduce somewhat these differences among groups (see Table 11). For Hispanics in particular, the presence of grants appears to increase by 9.7% the likelihood that they will attend a four-year institution (R Square of 0.176 minus previous R Square of 0.079). While the effect is less dramatic for the others, grants explain 3.9% of the variance for Blacks, 3.4% for Whites and 1.7% for Asians. In the presence of grants, educational goals diminish only slightly in importance, clearly indicating their ongoing role in motivating students to pick 4-year institutions.

Table 12 illustrates that loans have a more narrow impact, adding 3.1% toward explaining the variation in institution for Blacks, 2.1 % for Whites, and 2.0% for Hispanics. For Asians, the addition of loans caused R Square to decrease 0.1 %. Clearly some groups are more willing than others to borrow in order to attend a four-year institution. Work-study aid, which is more usual in four-year institutions, adds another little incentive for Blacks (1.2%) to attend a four-year school,

Table 10: NPSAS: 90: Regression of Level on Control Variables for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 213)		White (n = 3,402)	
	B	β	B	β	B	β	B	β
Sex	0.020	0.020	0.009	0.009	-0.010	-0.010	0.021	0.022
Family Income	0.000	0.027	0.000	0.136 **	0.000	-0.015	0.000	0.083 ***
Family in PSE	0.123	0.169 *	-0.051	0.071	0.120	0.188 **	0.036	0.054 ***
Cumulative GPA	0.009	0.159 *	0.012	0.232 ***	-0.006	-0.122	0.003	0.049 **
Educational goals	0.216	0.361 ***	0.120	0.216 ***	0.143	0.253 ***	0.154	0.277 ***
Multiple R	0.204		0.130		0.100		0.100	
R Square	0.175		0.118		0.079		0.098	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.

*** p < .001; ** p<.01; * p< .05

Table 11: NPSAS: 90: Regression of Level on Control Variables and Grant Aid for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 213)		White (n = 3,402)	
	B	β	B	β	B	β	B	β
Sex	0.028	0.028	0.010	0.010	-0.021	-0.021	0.019	0.020
Family Income	0.000	0.047	0.000	0.170 ***	0.000	0.113	0.000	0.119 ***
Family in PSE	0.113	0.155 *	-0.063	-0.087	0.086	0.136 *	0.025	0.038 *
Cumulative GPA	0.009	0.156 *	0.011	0.213 ***	-0.008	-0.163 *	0.001	0.017
Educational goals	0.193	0.324 ***	0.104	0.187 ***	0.135	0.240 ***	0.141	0.254 ***
Total grant aid	0.000	0.156 *	0.000	0.210 ***	0.000	0.345 ***	0.000	0.192 ***
Multiple R	0.227		0.172		0.200		0.134	
R Square	0.192		0.157		0.176		0.132	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.

***p <.001; ** p < .01; * p < .05

Table 12: NPSAS: 90: Regression of Level on Control Variables and Loans for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 213)		White (n = 3,402)	
	B	β	B	β	B	β	B	β
Sex	0.018	0.018	0.026	0.025	-0.026	-0.026	0.020	0.021
Family Income	0.000	0.052	0.000	0.186 ***	0.000	0.115	0.000	0.133 ***
Family in PSE	0.108	0.149	-0.062	-0.087	0.073	0.114	0.022	0.033 *
Cumulative GPA	0.008	0.153 *	0.010	0.195 ***	-0.008	-0.162 *	0.001	0.019
Educational goals	0.189	0.317 ***	0.110	0.199 ***	0.147	0.260 ***	0.142	0.254 ***
Total grant aid	0.000	0.136	0.000	0.160 **	0.000	0.292 ***	0.000	0.145 ***
Total loan aid	0.000	0.076	0.000	0.190 ***	0.000	0.165 **	0.000	0.154 ***
Multiple R	0.232		0.205		0.223		0.155	
R Square	0.191		0.188		0.196		0.153	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.
***p <.001; ** p < .01; * p < .05

Table 13: NPSAS: 90: Regression of Level on Control Variables and Workstudy for Ethnic Groups

	Asian (n = 140)		Black (n = 349)		Hispanic (n = 213)		White (n = 3,402)	
	B	β	B	β	B	β	B	β
Sex	0.017	0.017	0.039	0.038	-0.024	0.024	0.021	0.022
Family Income	0.000	0.053	0.000	0.195 ***	0.000	0.115	0.000	0.134 ***
Family in PSE	0.103	0.141	-0.054	-0.075	0.073	0.115	0.022	0.033 *
Cumulative GPA	0.008	0.153 *	0.010	0.195 ***	-0.008	-0.159 *	0.001	0.019
Educational goals	0.189	0.317 ***	0.110	0.199 ***	0.146	0.259 ***	0.141	0.254 ***
Total grant aid	0.000	0.125	0.000	0.134 **	0.000	0.281 ***	0.000	0.141 ***
Total loan aid	0.000	0.074	0.000	0.190 ***	0.000	0.166 **	0.000	0.151 ***
Total work-study aid	0.000	0.032	0.000	0.120 *	0.000	0.026	0.000	0.019
Multiple R	0.233		0.218		0.223		0.155	
R Square	0.186		0.200		0.193		0.153	

Note: Measures were weighted by the NCES construct pskeepwt/sample mean to adjust for nonresponse bias and original sample size.
***p <.001; ** p < .01; * p < .05

while the effect is negligible for the others: Whites, 0.0%, Asians, (-0.5%), and Hispanics, (-0.3%) (see Table 13).

NPSAS: 93 -- The Regressions

Tuition Spending

Impact of background characteristics on tuition spending

For each of the groups (Asian, Black, Hispanic and White) we repeated our previous regressions. This resulted in two equations, one for school choice according to tuition costs and one for institutional level -- either two- or four-year school.

An examination of the regression of tuition cost on the control variables shows that for Asians and Hispanics, family income was the only significant variable in determining those people who attend the most costly colleges and universities (see Table 14). Only for Whites were educational goals and cumulative GPA more important contributors than family income to the choice of a higher price college.

The R Square for the various ethnic groups shows a considerable range, indicating how much the previously noted differences in background characteristics account for variance in the cost of colleges chosen. At 0.116, R Square is the highest for our White students, and lowest for the Hispanic students (0.045), with both Asian students (0.104) and Black students (0.067) falling in between. In other words, for White students, a combination largely of higher family incomes, their personal educational goals, and their cumulative GPA explains 11.6% of the variance in the price of colleges attended. For Hispanics, the variance explained is only half that of the Whites. This suggests that while the same influences apply as for the Whites, their impact on the college purchase decision is considerably less, probably stemming from the significant differences we have already seen in family incomes ($54,000 versus $30,000). In other words, the models was most successful in explaining the variance in institutional costs for the Whites, and least successful for Blacks and Hispanics.

Table 14: NPSAS: 93: Regression of Tuition Spending on Control Variables for Ethnic Groups

	Asian (n = 85)		Black (n =151)		Hispanic (n = 112)		White (n = 1,290)	
	B	β	B	β	B	β	B	β
Sex	2317.488	0.160	-821.647	-0.098	-684.123	-0.071	227.997	0.024
Family Income	0.021	0.232 *	0.017	0.152	0.044	0.286 **	0.019	0.156 ***
Family in PSE	-1735.041	-0.184	-795.689	-0.116	-524.637	-0.053	45.194	0.005
Cumulative GPA	106.895	0.098	77.772	0.149	-17.861	-0.028	99.278	0.169 ***
Educational goals	827.934	0.086	804.166	0.144	58.114	0.010	1154.958	0.212 ***
Multiple R	0.157		0.099		0.088		0.119	
R Square	0.104		0.067		0.045		0.116	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.

*** p < .001; ** p<.01; * p< .05

Table 15: NPSAS: 93: Regression of Tuition Spending on Background Characteristics and Grants for Ethnic Groups

	Asian (n = 85)		Black (n =151)		Hispanic (n = 112)		White (n = 1,290)	
	B	β	B	β	B	β	B	β
Sex	2540.403	0.175 *	-234.284	-0.028	-123.611	-0.013	353.379	0.037
Family Income	0.037	0.401 ***	0.015	0.137 *	0.072	0.473 ***	0.034	0.270 ***
Family in PSE	-950.082	-0.101	-479.614	-0.070	-991.905	-0.100	-233.883	-0.026
Cumulative GPA	37.854	0.035	27.298	0.052	-5.354	-0.008	44.007	0.075 ***
Educational goals	824.167	0.085	480.341	0.086	-471.553	-0.081	607.258	0.111 ***
Total grant aid	0.981	0.607 ***	0.714	0.601 ***	0.999	0.736 ***	0.833	0.553 ***
Multiple R	0.492		0.437		0.585		0.392	
R Square	0.453		0.414		0.561		0.390	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.

***p <.001; ** p < .01; * p < .05

Table 16: NPSAS: 93: Regression of Tuition Spending on Control Variables and Loans for Ethnic Groups

	Asian (n = 85)		Black (n =151)		Hispanic (n = 112)		White (n = 1,290)	
	B	β	B	β	B	β	B	β
Sex	2564.170	0.177 *	-113.304	-0.013	-128.092	-0.013	178.001	0.018
Family Income	0.037	0.403 ***	0.019	0.166 **	0.073	0.478 ***	0.037	0.298 ***
Family in PSE	-946.126	-0.101	-552.815	-0.080	-733.377	-0.074	-315.844	-0.035
Cumulative GPA	34.977	0.032	44.512	0.085	15.239	0.024	39.336	0.067 **
Educational goals	828.192	0.086	447.049	0.080	-556.767	-0.096	626.006	0.115 ***
Total grant aid	0.958	0.593 ***	0.668	0.562 ***	0.879	0.648 ***	0.700	0.464 ***
Total loan aid	0.138	0.033	0.862	0.359 ***	0.995	0.280 ***	0.865	0.289 ***
Multiple R	0.493		0.563		0.654		0.466	
R Square	0.447		0.541		0.631		0.463	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.
***p <.001; ** p < .01; * p < .05

Table 17: NPSAS: 93: Regression of Tuition Spending on Control Variables and Workstudy for Ethnic Groups

	Asian (n = 85)		Black (n =151)		Hispanic (n = 112)		White (n = 1,290)	
	B	β	B	β	B	β	B	β
Sex	2578.776	0.178 *	-28.412	-0.003	-186.035	-0.019	197.540	0.020
Family Income	0.037	0.403 ***	0.019	0.169 **	0.073	0.479 ***	0.038	0.301 ***
Family in PSE	-919.079	-0.098	-593.177	-0.086	-676.480	-0.068	-326.153	-0.036
Cumulative GPA	36.027	0.033	40.205	0.077	20.272	0.031	39.045	0.067 **
Educational goals	847.281	0.088	394.447	0.071	-589.453	-0.102	610.548	0.112 ***
Total grant aid	0.962	0.595 ***	0.655	0.551 ***	0.844	0.622 ***	0.682	0.452 ***
Total loan aid	0.145	0.034	0.821	0.342 ***	0.932	0.263 ***	0.840	0.280 ***
Total work-study aid	-0.106	-0.008	0.595	0.083	0.718	0.082	0.589	0.052 *
Multiple R	0.493		0.569		0.659		0.468	
R Square	0.440		0.545		0.633		0.465	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.
***p <.001; ** p < .01; * p < .05

Impact of financial aid on tuition spending

When the total amount of grants is added as an independent variable, the differences among the groups become more apparent (see Table 15). Most affected are the Hispanics, for whom grants help to explain more than 51.6% of the variance in college price (R Square of 0.561 minus previous R Square 0.045). Likewise for Asians, grants explain an additional 34.9% of the variance, for Blacks, 34.7% of the variance and for Whites 27.4%. In other words, the existence of grants appears to be encouraging particularly Hispanics and to a lesser degree Blacks and Asians to "buy up" in the college-price hierarchy. In the presence of grants, family income becomes highly important for Hispanics and Asians and significant for Blacks, hinting at the existing relationship between the receipt of aid like Pell grants and the family income test.

Rather predictably, loans have a lesser influence on the groups in their selection of college by price, although there are some surprises (see Table 16). For Blacks, loans account for another 12.7% of the variance in college purchase price (new R Square of 0.541 minus previous R Square of 0.390). For the other groups, the variance explained by the presence of loans was considerably smaller, from 7.0 for Hispanics and 7.3 for Whites, while it appears to have no impact on the Asians college purchase decisions. It would seem that the receipt of loans is encouraging relatively few students from these latter groups to attend a more expensive institution than they might in the absence of this form of aid. Work-study aid proved to be almost negligible for all groups in allowing them to pay more for tuition (see Table 17). The R Square differences amounted to: -0.7% for Asians, 0.4% for Blacks, 0.2% for Hispanics and 0.2% for Whites.

Institutional Level

Impact of background on choice of institutional level (two- or four-year)

For Whites, educational goals make the strongest contribution to understanding the variance in institutional level (see Table 18). While educational goals are also significant for Hispanics in choosing 4-year colleges, the number of family in postsecondary education and a lower GPA are also important contributors. For Whites, higher GPA was moderately significant, and family

Table 18: NPSAS: 93: Regression of Level on Control Variables for Ethnic Groups

	Asian (n = 85)		Black (n = 151)		Hispanic (n = 112)		White (n = 1,292)	
	B	β	B	β	B	β	B	β
Sex	-0.037	-0.042	-0.095	-0.109	-0.003	-0.003	-0.007	-0.007
Family Income	0.000	-0.123	0.000	0.128	0.000	0.153	0.000	0.084 ***
Family in PSE	-0.001	-0.002	-0.082	-0.114	0.190	0.194 *	0.050	0.056 *
Cumulative GPA	0.010	0.146	0.005	0.097	-0.016	-0.250 **	0.007	0.118 ***
Educational goals	0.130	0.226	0.074	0.127	0.106	0.189 *	0.212	0.393 ***
Multiple R	0.099		0.072		0.128		0.205	
R Square	0.043		0.040		0.087		0.202	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.

*** p < .001; ** p<.01; * p< .05

Table 19: NPSAS: 90: Regression of Level on Control Variables and Grant Aid for Ethnic Groups

	Asian (n = 85)		Black (n = 151)		Hispanic (n = 112)		White (n = 1,292)	
	B	β	B	β	B	β	B	β
Sex	-0.035	-0.040	-0.071	-0.080	0.020	0.021	-0.002	-0.002
Family Income	0.000	-0.101	0.000	0.122	0.000	0.225 *	0.000	0.132 ***
Family in PSE	0.005	0.008	-0.068	-0.095	0.170	0.174 *	0.038	0.043
Cumulative GPA	0.009	0.138	0.003	0.058	-0.016	-0.244 **	0.005	0.078 **
Educational goals	0.130	0.226	0.060	0.103	0.088	0.156	0.189	0.350 ***
Total grant aid	0.000	0.078	0.000	0.243 **	0.000	0.288 **	0.000	0.233 ***
Multiple R	0.105		0.128		0.205		0.254	
R Square	0.036		0.091		0.159		0.250	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.

***p <.001; ** p < .01; * p < .05

Table 20: NPSAS: 93: Regression of Level on Control Variables and Loans for Ethnic Groups

	Asian (n = 85)		Black (n = 151)		Hispanic (n = 112)		White (n = 1,292)	
	B	β	B	β	B	β	B	β
Sex	-0.025	-0.029	-0.063	-0.072	0.020	0.021	-0.012	-0.012
Family Income	0.000	-0.083	0.000	0.139	0.000	0.224 *	0.000	0.148 ***
Family in PSE	0.006	0.011	-0.073	-0.101	0.165	0.168	0.034	0.037
Cumulative GPA	0.008	0.119	0.004	0.077	-0.016	-0.251 **	0.004	0.074 *
Educational goals	0.132	0.229	0.058	0.100	0.090	0.159	0.190	0.353 ***
Total grant aid	0.000	-0.023	0.000	0.221 **	0.000	0.306 **	0.000	0.162 ***
Total loan aid	0.000	0.229	0.000	0.210 **	0.000	-0.055	0.000	0.168 ***
Multiple R	0.145		0.171		0.207		0.279	
R Square	0.068		0.130		0.154		0.275	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.
***p <.001; ** p < .01; * p < .05

Table 21: NPSAS: 93: Regression of Level on Control Variables and Workstudy for Ethnic Groups

	Asian (n = 85)		Black (n = 151)		Hispanic (n = 112)		White (n = 1,292)	
	B	β	B	β	B	β	B	β
Sex	-0.035	-0.041	-0.044	-0.050	0.023	0.025	-0.010	-0.010
Family Income	0.000	-0.081	0.000	0.147	0.000	0.223 *	0.000	0.152 ***
Family in PSE	-0.013	-0.023	-0.082	-0.114	0.161	0.165	0.032	0.036
Cumulative GPA	0.007	0.108	0.003	0.059	-0.016	-0.256 **	0.004	0.073 **
Educational goals	0.118	0.205	0.047	0.080	0.092	0.163	0.188	0.349 ***
Total grant aid	0.000	-0.049	0.000	0.198 **	0.000	0.322 **	0.000	0.168 ***
Total loan aid	0.000	0.210	0.000	0.173 *	0.000	-0.044	0.000	0.158 ***
Total work-study aid	0.000	0.100	0.000	0.180 *	0.000	-0.052	0.000	0.062 **
Multiple R	0.152		0.199		0.209		0.282	
R Square	0.063		0.154		0.148		0.277	

Note: Measures were weighted by the NCES construct np93wt/sample mean to adjust for nonresponse bias and original sample size.
***p < .001; ** p < .01; * p < .05

income and family members in college were weakly significant. For neither Asians nor Blacks did any of the variables reach acceptable levels of significance.

As a result, the adequacy of the equation in explaining variance in the type of institution chosen differed considerably for the four groups. At its best, it explained 20.2% of the variance for Whites and 8.7% for Hispanics, compared to 4.3% for Asians and 4.0% for Blacks.

Impact of financial aid on choice of institutional level (two- or four-year)

The effect of financial aid seems to compound these differences among the groups (see Table 19). For Blacks, Hispanics, and Whites, the presence of grants appears to make it somewhat more likely that they will attend a four-year school, increasing R Square by 7.2% for Hispanics, 5.1% for Blacks, 4.8% for Whites. For Asians, grant aid is not significant in their choice of school type. Loans (see Table 20) have a variable impact, adding 3.9% toward explaining the variation in institution for Blacks and 2.5% for Whites, but only 0.5% for Hispanics. Loan aid was not significant for Asians even though their R square increased by 3.2%. Work-study aid (see Table 21), which is more usual in four-year institutions is significant only for Blacks and Whites. It adds another little piece of assistance for Blacks (2.4%), but performs only minimally in helping Whites (0.2%) reach 4-year institutions.

Discussion and Comparison of the Regressions

Regressions of Tuition Spending

When we compared the regressions on tuition cost, the importance of grant aid becomes obvious. For all four groups, and in both periods under study, grant aid is clearly allowing students to attend more expensive institutions than they would be able to or would choose to, given their own resources. In many cases, the grant aid beta is nearly twice as large as the family income beta, indicating both how these students' incomes are unable to offer them the chance to attend expensive institutions, and how much grant aid makes up this deficit. While grant aid obviously differs in its impact from group to group, its important in purchasing additional opportunities should be noted.

Similarly, comparing 1990 with 1993 outcomes, we should note the larger betas in 1993 for all but the Black group, which seem to indicate that grant aid is playing an increasing role for Asians, Hispanics and Whites, while nearly maintaining its previous importance for Blacks. Against this apparent gain, we must balance whatever was happening to tuition costs in this three-year period. It may well be that while grant aid was allowing these groups to pay more for tuition in 1993, than in 1990, if the tuition at quality schools had risen disproportionately, the 1993 group might actually be getting less for their extra dollars. To round out this argument about grant aid allowing student to buy up in the educational hierarchy, we would need to know more about the relative quality each group is getting for its money.

A comparison of the two regressions on loans emphasizes the growing importance of this form of aid for all but the 1993 Asian students, who were averaging the highest tuitions in 1993. Some possible explanations suggest themselves for this occurrence. From our descriptive statistics, the Asians are already averaging higher amounts of grant aid and work-study aid than the other groups in the study. As well, the Asians show the highest mean incomes of all the groups. While the Asians did average higher loans in 1993 than 1990, and these were not significant contributions to their college purchase decision. We should add that the Asian sample declined by nearly half from 1990 to 1993, posing the very real possibility that an inadequate number of cases might distort our findings.

Conversely, while the average Hispanic student's loan was slightly lower in 1993, the overall effect was that loan aid made a greater contribution to their spending on tuition, than it did in 1990. Again the problem is one of relativity. While it appears that loan aid is permitting them to attend slightly more expensive institutions in 1993, the relationship of these tuitions to the expensive tuitions of 1990 is not explored here. For Blacks, the situation seems more straightforward. Loan aid is making considerably more difference to their tuition spending in 1993, a fact that is supported by the related statistics. Their loans are averaging double the 1990 figure; and they are spending about $1,500 more on average for tuition in 1993. For Whites the pattern is similar but

less pronounced. Loan aid again is making a larger contribution to explaining the variation in tuitions paid.

As one might expect, work-study aid is relatively unimportant for all groups. It makes a significant contribution, still less than one percent, toward explaining tuition variations for only Whites in both 1990 and 1993.

Regressions of Institutional Level

Basically in 1990, background characteristics were considerably more important for the Asians than for other groups in predicting whether they might attend a four-year rather than two-year institution. The most important variable in the equation for them and for Hispanics and Whites was educational goals. It seems likely that if their goals extended beyond a bachelor's degree, it would be logical for them to begin at a four-year college or university. Much the same argument might apply for the Blacks of 1990, for whom the GPA variable was also a large contributor to predicting enrollment at a four-year school. When these results were compared with the same regression using NPSAS: 93 data, we see a considerably different picture. By 1993, these same background characteristics were insignificant for Asians and Blacks (i.e., explained less of the variance in their educational destinations). But they were considerably more important for Whites for whom they explained 20.2% of the variance. In both periods, educational goals and family in postsecondary education were significant contributors for Hispanics.

Conceivable the variables involved in 1993 were no longer the ones figuring largely in the decision of institutional level for Asians or Blacks. We should note that according to the correlations both Asians and Blacks experienced a major shift in college destination from 2-year to 4-year institutions from 1990 to 1993. By contrast, Whites appear to have moved in the opposite direction, which is why our control variables appear so much stronger in explaining this variance.

Grant aid makes an appreciable difference in 1990, only for Hispanics, for whom it raises the likelihood of attending a four-year institution by nearly 10% beyond the contribution of their background characteristics. Even in 1993, this effect continues, with grant aid making a more than 7% contribution toward explaining variance for Hispanics. Both for Blacks and Whites, grant aid

had an important effect in 1990 and a slightly larger impact in 1993. For Asians, the process was reversed. It contributed only slightly in 1990 and negligibly in 1993.

The impact of loan aid, while not large, grew somewhat for only Blacks, Asians, and Whites when 1993 is compared with 1990. The largest apparent change was for Asians, but loan aid did not reach an acceptable level of significance. Nevertheless, we should note its possible effect in explaining their attendance at four-year schools in 1990. Both for Blacks and Whites, loan aid made a small but significant contribution toward their selection of a 4-year school. Clearly this accords with what we know of Blacks' willingness to borrow and with our own statistics which show highest borrowing by Blacks in both years. Hispanics appear to have changed little in the contribution that loans made to their choice of four-year institutions, with the betas insignificant for 1993.

With one exception, the impact of work-study aid was negligible in both periods as far as institutional level. However, for Blacks, the addition of work-study aid to the equation added 1.2% additional power in 1990 and 2.4% in 1993. This latter change in particular points up the quite surprising effects even small amounts of aid (mean $222 in 1993) can have on educational decision making, particularly for minorities from low income backgrounds.

STUDY LIMITATIONS

The lack of traditional variables like institutional selectivity made it difficult to follow Hearn's study closely. While the expensiveness of tuition often coincides with what we know of institutional selectivity and even institutional quality, we readily acknowledge that tuition cost is a far from adequate proxy. Institutional level has problems as well since in effect we are participating in the same sort of stratification that we are studying.

Like many other research efforts dealing with minorities, this one was hampered by sample sizes. For both study periods, the Native American group was too small to achieve significant results and even the regressions on the Asian group in 1993 (n = 85) required mean substitution on both grade point averages and educational goals.

Missing values were an ongoing handicap with both sets of NPSAS data, precluding the use of obvious variables such as SAT scores. For example, for 1990, approximately 75% of our cases had missing values on SAT and for 1993, 60 % of the cases were missing SAT scores. Other likely variables, mother's and father's education, were almost as deficient in both periods. Another possible variable – public or private control -- suggests other possibilities for exploration. Possibly, control, coupled with institutional level, could add to the power of our equations and provide a more extensive picture of where financial aid is permitting these students to attend.

Another important limitation was the relative nature of our dependent variable -- tuition spending. In the first place, we did not try to achieve constant dollars for the tuitions in both periods, partly because even constant dollars would not account for discrepancies as individual institutions adjusted their rates. As a result we are able to talk about our variables making greater or less contributions to tuition spending at the two different points in time. But we cannot talk about the 1993 groups necessarily being able to purchase more expensive institutions than the 1990 groups. In point of fact we do not know this.

Our technique in using all three financial aid variables in the equations may also have had some impact on our results. Only a re-run with each entered in a separate regression would demonstrate whether we are seeing valid contributions by each aid form

CONCLUSIONS

To a large extent, the foregoing operations point up the difficulties of ascertaining what is going on in even a tiny corner of the black box. Rather ambitiously, we attempted to explore and compare these activities at two points in time. Nevertheless we are able to reach some tentative conclusions.

First, there remains a considerable difference among ethnic groups in the expensiveness of the colleges that they can hope to attend relative to their backgrounds. Our success in isolating the background variables that contribute to this spending decision was minimal for Hispanics and better for Asians and Whites. It is worth noting that the contribution of educational goals figured largely in the tuition spending of Asians, Blacks and Whites in 1990, but only in the spending by

Whites in 1993. Here we suspect we may well be touching on a fundamental change over the period in how these groups approach postsecondary purchase decisions. The same change is apparent in the importance of educational goals to the choice of institutional level from 1990 to 1993. In 1990, goals were a significant determinant in explaining variance in institutional level for all. By 1993, they were only slightly important for Whites, and less for Hispanics. Clearly, there are other factors at work that have caused the shift among both Blacks and Asians to 4-year schools.

Basically we were able to show that the various forms of financial aid made some difference in the type of institution these students were able to attend. Again the differences among the groups were irregular. The most interesting development over the period was the considerably smaller contribution of financial aid to explaining institutional level for all but Whites. Only for Whites does it appear that financial aid is playing a major role in determining whether they go to 4-year schools.

Looking at the changes that financial aid wrought in tuition spending by the various groups, we can see that financial aid generally contributed more in 1993 than in 1990 to enabling all four groups to spend more for tuition. Of course what we don't know is whether increases in tuition by the top schools negated that apparent gain. But on purely comparative data, financial aid made the most difference in both years for Hispanics, followed closely by Blacks. While the change in purchasing power from 1990 to 1993 was not large for Asians, it appears to be nearly 10% for Whites.

Overall we suggest that despite its limitations, the analysis does demonstrate the considerable importance of financial aid, particularly grant aid, in widening the student's choice for both tuition spending and institutional level. At the same time, it supports the conclusion that inequalities of socioeconomic status continue to restrict some minority groups in their types of schooling. Work by Grubb (1990) and others suggests that these early choices will have long-term impacts on careers and earnings, reinforcing the need to reconsider these issues of access and equity.

Conceivably, if the federal government retreats from its present financial aid policies, choice will become a historical relic before it is ever achieved.

If minorities such as Blacks and Hispanics are to be represented in all institutional levels across a range of tuition costs, the onus may fall on institutions for maintaining the sort of access and diversity which appears to be supported here by grants, and to a lesser extent, loans. It seems unlikely that these same institutions which are consistently raising their tuitions and facing losses in federal and state support will rally to the aid of disadvantaged groups. The only beneficiary in such a scenario would appear to be the community and junior colleges which already are attracting a disproportionate number of minority students, and whose relative cheapness might ensure a near-captive enrollment. In the absence of targeted grants for minorities, we fear that institutional stratification can only accelerate.

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Appendix A - Variables for NPSAS 1989-90

Appendix A-1:
Coding scheme of variables in NPSAS 90 analysis

Race	
Asian	coded 1 = Asian; 0 = else
Hispanic	coded 1 = Hispanic; 0 = else
Black	coded 1 = Black; 0 = else
White	coded 1 = White; 0 = else
Background Characteristics	
Sex	coded 1 = male; 0 = female
Family income	family income + untaxed income; continuous variable
Family in postsecondary education	continuous variable
Cumulative grade point average	coded in intervals: 1 = lowest; 40 = highest
Educational goals	coded in intervals: 1 = <1 year of trade school or 1 to 2 years of trade school or >= 2 years of trade school; 2 = < 2 years of college or >= 2 years of college; 3 = bachelor's degree; 4 = master's degree; 5 = Ph.D. or professional degree
Types of Aid	
Total grants	continuous variable
Total loans	continuous variable
Total workstudy	continuous variable
Dependent Variables	
Tuition spending	continuous variable
Institutional level	level of institution, coded 1 = 4 year or more, 0 = 2-3 year

Appendix B - Variables for NPSAS 1992-93

Appendix A-2:
Coding scheme of variables in NPSAS 93 analysis

Race	
Asian	coded 1 = Asian; 0 = else
Hispanic	coded 1 = Hispanic; 0 = else
Black	coded 1 = Black; 0 = else
White	coded 1 = White; 0 = else
Background Characteristics	
Sex	coded 1 = male; 0 = female
Family income	continuous variable
Family in postsecondary education	continuous variable
Cumulative grade point average	coded in intervals: 1 = lowest; 40 = highest
Educational goals	coded in intervals: 1 = < high school, or GED or high school graduate, or < 1 year of trade school, or 1 year but less than 2 years of trade school, or >= 2 years of trade school; 2 = < 2 years of college or associate's degree, or 2 or more years of college; 3 = bachelor's degree; 4 = master's degree; 5 = first professional degree, or other advanced professional degree or doctorate
Types of Aid	
Total grants	continuous variable
Total loans	continuous variable
Total workstudy	continuous variable
Dependent Variables	
Tuition spending	continuous variable
Institutional level	level of institution, coded 1 = 4 year or more; 0 = 2-3 year